WHAT IS CLAIMED IS:

1.   A device for computing circuit paths between a first node and a second node
within a network, the network including a plurality of elements, the device comprising:

5   a route generator, the route generator being arranged to generate a primary circuit
path between the first node and the second node, the primary circuit path including a first
element selected from the plurality of elements; and

a list mechanism, the list mechanism being arranged to identify the first element,
wherein the route generator is further arranged to generate an alternate circuit path

10   between the first node and the second node using the list mechanism, wherein the
alternate circuit path does not include the first element identified by the list mechanism.

2.   A device as recited in claim 1 wherein the first element is a link.

15 3.   A device as recited in claim 1 wherein the first element is a node.

4.   A device as recited in claim 1 wherein the plurality of elements includes a
protected link, the list mechanism further being arranged to identify the protected link,
wherein the alternate circuit path does not include the protected link.

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5.   A device as recited in claim 1 wherein the route generator is arranged to generate
the primary circuit path that includes the first element and a set of elements selected from
the plurality of elements, and the list mechanism is arranged to identify the first element
and the set of elements as being inaccessible for use in generating the alternate circuit

25 path.

6.   A device as recited in claim 5 wherein the plurality of elements includes a
protected link, the list mechanism further being arranged to identify the protected link as
being inaccessible for use in generating the alternate circuit path.

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7.   A device as recited in claim 1 wherein the route generator is arranged to accept an input, the input being arranged to specify one of a nodal diverse constraint and a link diverse constraint for the alternate circuit path.

5   8.   A device as recited in claim 7 wherein when the input specifies the nodal diverse constraint, the first element is a node.

9.   A device as recited in claim 7 wherein when the input specifies the link diverse constraint, the first element is a link.

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10.   A device as recited in claim 1 wherein the device is associated with the first node.

11.   A device as recited in claim 1 wherein the route generator is further arranged to implement the primary circuit path and the alternate circuit path.

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12.   A device for computing an alternate circuit path within a network, the alternate circuit path being associated with a primary circuit path defined between a first node of the network and a second node of the network, the network including a plurality of elements, the primary circuit path including a first element selected from the plurality of

20   elements, the device comprising:

     means for identifying the first element as being inaccessible for use as a part of the alternate circuit path; and

     means for routing the alternate circuit path, wherein routing the alternate circuit path includes routing the alternate circuit path between the first node and the second node

25   such that the first element is not included in the alternate circuit path using at least one element selected from the plurality of elements that is not the first element.

13.   A device as recited in claim 12 wherein the first element is a link.

30   14.   A device as recited in claim 12 wherein the first element is a node.

15.   A device as recited in claim 12 further including:

means for identifying a tunnel in the primary circuit path, wherein the first element is included in the tunnel and wherein the means for identifying the first element as being inaccessible for use as a part of the alternate circuit path includes means for

5   identifying the first element as being included in the tunnel.

16.   A device as recited in claim 12 wherein the plurality of elements includes a protected link, the device further including:

means for identifying the protected link as being inaccessible to the alternate

10   circuit path, wherein the means for routing the alternate circuit path includes means for routing the alternate circuit path between the first node and the second node such that the protected link is not included in the alternate circuit path.

17.   A device as recited in claim 12 further including:

15   means for creating a list, the means for creating the list including means for including an identifier which identifies the first element as being inaccessible for use as a part of the alternate circuit path, the list being arranged to be used by the means for routing the alternate circuit path.

20   18.   A device as recited in claim 17 wherein the plurality of elements includes a protected link, the device further including:

means for identifying the protected link as being inaccessible to the alternate circuit path, wherein the means for including the identifier which identifies the first element as being inaccessible for use as a part of the alternate circuit path is arranged to

25   include an identifier which identifies the protected link as being inaccessible to the alternate circuit path in the list.

19.   An element for use in an optical network, the optical network including a plurality of nodes, the plurality of nodes including a destination node, the optical network further

30   including a plurality of links, the element comprising:

a route generator, the route generator being arranged to compute a first circuit path between the element and the destination node, wherein the first circuit path includes a first link included in the plurality of links; and

a list, the list including a plurality of identifiers, the plurality of identifiers being

5   arranged to identify selected links included in the plurality of links, the plurality of identifiers including a first identifier that identifies the first link, wherein the route generator is further arranged to compute a second circuit path between the element and the destination node using the list, wherein the second circuit path includes a second link included in the plurality of links and does not include the selected links identified by the

10   plurality of identifiers included in the list.

20.   An element according to claim 19 wherein the selected links included in the plurality of links include a protected link.

15   21.   An element according to claim 19 wherein the element is a source node.

22.   An element according to claim 19 wherein the route generator is further arranged to identify the first link, to create the first identifier that identifies the first link, and to place the first identifier that identifies the first link in the list.

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23.   An element according to claim 22 wherein the route generator is still further arranged to generate the plurality of identifiers that are arranged to identify the selected links included in the plurality of links and to place the plurality of identifiers that are arranged to identify the selected links included in the plurality of links in the list.

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24.   An element for use in an optical network, the optical network including a plurality of nodes, the plurality of nodes including a destination node, the optical network further including a plurality of links, the element comprising:

a route generator, the route generator being arranged to compute a first circuit path between the element and the destination node, wherein the first circuit path includes a first node included in the plurality of nodes; and

a list, the list including a first identifier, the first identifier being arranged to

5   identify the first node, wherein the route generator is still further arranged to compute a second circuit path between the element and the destination node using the list, wherein the second circuit path includes a second node included in the plurality of links and does not include the first node.

10   25.   An element according to claim 24 wherein the list further includes a second identifier, the second identifier being arranged to identify a protected link included in the plurality of links, wherein the second circuit path does not include the protected link.

26.   An element according to claim 23 wherein the element is a source node.

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27.   An element according to claim 23 wherein the route generator is further arranged to identify the first node, to create the first identifier that identifies the first node, and to place the first identifier that identifies the first node in the list.

20   28.   A method for computing an alternate circuit path that corresponds to a primary circuit path within a network, the network including a plurality of elements, the primary circuit path being defined between a start node and an end node, the primary circuit path including a first element selected from the plurality of elements, the method comprising;

identifying the first element as being inaccessible to the alternate circuit path

25   using a routing algorithm; and

creating the alternate circuit path using the routing algorithm, wherein creating the alternate circuit path includes creating the alternate circuit path between the start node and the end node such that the first element is not included in the alternate circuit path using at least one element selected from the plurality of elements that is not the first

30   element.

29.   A method as recited in claim 28 wherein the first element is a link.

30.   A method as recited in claim 28 wherein the first element is a node.

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31.   A method as recited in claim 30 wherein the node is included in a tunnel, the tunnel being included in the primary circuit path.

32.   A method as recited in claim 28 wherein the plurality of elements includes a

10   protected link, the method further including:

identifying the protected link as being inaccessible to the alternate circuit path using the routing algorithm, wherein creating the alternate circuit path includes creating the alternate circuit path between the start node and the end node such that the protected link is not included in the alternate circuit path.

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33.   A computer program product for computing an alternate circuit path that corresponds to a primary circuit path within a network, the network including a plurality of elements, the primary circuit path being defined between a start node and an end node, the primary circuit path including a first network element selected from the plurality of

20   elements, the computer program product comprising;

computer code that causes the first network element to be identified as being inaccessible to the alternate circuit path;

computer code that causes the alternate circuit path to be created using a routing algorithm, wherein the computer code that causes the alternate circuit path to be created

25   includes computer code that causes the alternate circuit path to be created between the start node and the end node such that the first network element is not included in the alternate circuit path using at least one network element selected from the plurality of elements that is not the first network element; and

a computer-readable medium that stores the computer codes.

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34.   A computer program product as recited in claim 31 wherein the plurality of elements includes a protected link, the computer program product further including:

computer code that causes the protected link to be identified as being inaccessible to the alternate circuit path using the routing algorithm, wherein the computer code that causes the alternate circuit path to be created includes computer code that causes the alternate circuit path to be created between the start node and the end node such that the protected link is not included in the alternate circuit path.